

What is claimed is:

1. A real-time control system having a fixed loop time, comprising:
  - an input having frequency ranging both above and below the fixed loop time; and
  - a method for utilizing information provided by a pulse wheel and sensed by a sensor, comprising the steps of:
    - providing a rotating shaft;
    - providing a pulse wheel rigidly affixed onto the rotating shaft;
    - providing a sensor sensing an information out of the pulse wheel, the sensed information comprising a first information and a second information; and
  - when the rotating rate of the rotating shaft is greater than a predetermined value, averaging at least two pulses wherein one of the at least two pulses being related to the first information and at least one pulse being related to the second information; thereby, the second information is used along with the first information for a more accurate representation of the information.
2. The method of claim 1, wherein the first information comprises information relating to the pulse wheel, which is sequentially the latest information disposed to be processed by a controller.
3. The method of claim 1, wherein the second information comprises information relating to the pulse wheel, which is sequentially not the latest information disposed to be processed by a controller, but occurs prior in time to the latest information.
4. The method of claim 1, wherein the averaging step comprising starting slightly before a threshold wherein there are 2 updates per loop.

- 1 5. The method of claim 1, wherein the first information is phase angle information sensed  
2 by the sensor out of the pulse wheel.
- 1 6. The method of claim 1, wherein the second information is phase angle information  
2 sensed by the sensor out of the pulse wheel.
- 1 7. The method of claim 1, wherein the rotating shaft is a cam shaft of an internal  
2 combustion engine.
- 1 8. The method of claim 1, wherein the rotating shaft is a crank shaft of an internal  
2 combustion engine.
- 1 9. The method of claim 1, wherein the pulse wheel comprises a wheel having teeth  
2 distributed thereon.
- 3 10. A method for utilizing information provided by a pulse wheel and sensed by a sensor,  
4 comprising the steps of:  
5 providing a rotating shaft;  
6 providing a pulse wheel rigidly affixed onto the rotating shaft;  
7 providing a sensor sensing an information out of the pulse wheel, the sensed  
8 information comprising a first information and a second information;  
9 providing a controller controlling or processing the sensed information out of the  
10 pulse wheel at a predetermined sampling rate; and  
11 when the rotating rate of the rotating shaft is greater than a predetermined  
12 value, averaging at least two pulses wherein one of the at least two  
13 pulses being related to the first information and at least one pulse  
14 being related to the second information; thereby, the second  
15 information is used along with the first information for a more  
16 accurate representation of the information.

- 2           11. The method of claim 1, wherein the first information comprises  
3                   information relating to the pulse wheel, which is sequentially the  
4                   latest information disposed to be processed by the controller.
- 1           12. The method of claim 1, wherein the second information comprises information  
2                   relating to the pulse wheel, which is sequentially not the latest information  
3                   disposed to be processed by the controller, but occurs prior in time to the  
4                   latest information.
- 1           13. The method of claim 1, wherein the averaging step comprising starting slightly  
2                   before a threshold wherein there are 2 updates per loop.
- 1           14. The method of claim 1, wherein the controller is an engine control unit.
- 1           15. The method of claim 1, wherein the first information is phase angle information sensed  
2                   by the sensor out of the pulse wheel.
- 1           16. The method of claim 1, wherein the second information is phase angle information  
2                   sensed by the sensor out of the pulse wheel.
- 1           17. The method of claim 1, wherein the rotating shaft is a cam shaft of an internal  
2                   combustion engine.
- 1           18. The method of claim 1, wherein the rotating shaft is a crank shaft of an internal  
2                   combustion engine.
- 1           19. The method of claim 1, wherein the pulse wheel comprises a wheel having teeth  
2                   distributed thereon.